

# Photon Maps at Square USA

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Square USA / Pixar

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# Contents

- Were photon maps used for the movie *Final Fantasy: The Spirits Within* ?
- Was global illumination used ?
- How are photon maps currently being used at Square USA ?

# Photon map caustics in FF movie



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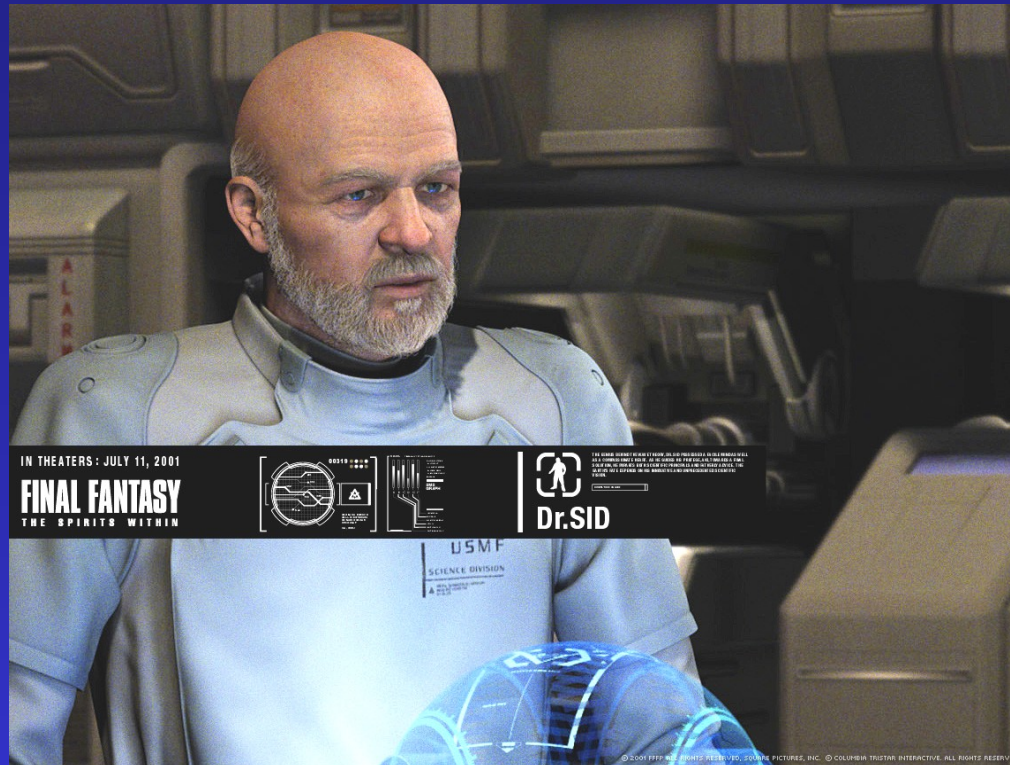
Maya photon map caustic plug-in [Jos Stam]

# Global illumination in FF movie

- Used by some TDs to generate lighting references (simplified geometry, single frame): BMRT, Lightscape, ...
- Not used directly for rendering (none of the used renderers can do global illumination)

# Global illumination in FF movie

- Realistic lighting with many fake light sources (“bounce lights”): tedious



# Global illumination in future movies

## Goals:

- Realistic lighting w/o tedious manual labor
- Global illumination a useful tool for production (use as basis)

# In-house renderer: Kilauea

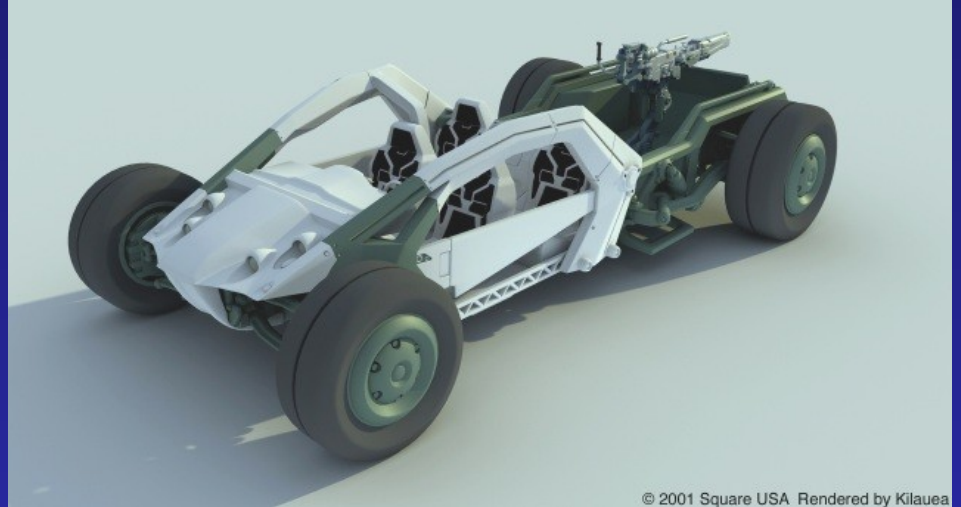
- Massively parallel
- Photon maps w/ “tricks”
- Developed over past 3 years
- Currently being tested in production
- Will be used for future projects



# Kilauea images



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# More info

- Course #40 “Practical parallel processing for todays rendering challenges” by Toshi Kato
- [www.squareusa.com/kilauea](http://www.squareusa.com/kilauea)

# Conclusion

- Photon maps were used for caustics in *Final Fantasy: The Spirits Within*
- Photon maps will be used for global illumination in future projects at Square USA
- See course #40 this afternoon

# Acknowledgments

- Gary Mundell

